SEQUENCE LISTING

```
<110> WEIHE, EBERHARD
      SCHAFER, MARTIN
<120> SCREENING PROCESS FOR VARIOUS INDICATIONS USING BNPI AND/OR DNPI
<130> 029310.53352US
<140>
<141>
<150> PCT/EP02/10707
<151> 2002-09-24
<150> DE 101 47 006.1
<151> 2001-09-24
<150> DE 101 47 028.2
<151> 2001-09-25
<160> 14
<170> PatentIn Ver. 3.2
<210> 1
<211> 2366
<212> DNA
<213> Homo sapiens
<400> 1
ccggcggcag gagccgccac catggagttc cgccaggagg agtttcggaa gctagcgggt 60
cgtgctctcg ggaagctgca ccgccttctg gagaagcggc aggaaggcgc ggagacgctg 120
gagctgagtg cggatgggcg cccggtgacc acgcagaccc gggacccgcc ggtggtggac 180
tgcacctgct tcggcctccc tcgccgctac attatcgcca tcatgagtgg tctgggcttc 240
tgcatcagct ttggcatccg ctgcaacctg ggcgtggcca tcgtctccat ggtcaataac 300
agcacgaccc accgcggggg ccacgtggtg gtgcagaaag cccagttcag ctgggatcca 360
gagactgtcg gcctcataca cggctccttt ttctggggct acattgtcac tcagattcca 420
ggaggattta tctgtcaaaa atttgcagcc aacagagttt tcggctttgc tattgtggca 480
acatccactc taaacatgct gatcccctca gctgcccgcg tccactatgg ctgtgtcatc 540
ttcgtgagga tcctgcaggg gttggtagag ggggtcacat accccgcctg ccatgggatc 600
tggagcaaat gggccccacc cttagaacgg agtcgcctgg cgacgacagc cttttgtggt 660
tectatgetg gggeggtggt egegatgeee etegeegggg teettgtgea gtaeteagga 720
tggagetetg ttttetaegt etaeggeage ttegggatet tetggtaeet gttetggetg 780
ctcgtctcct acgagtcccc cgcgctgcac cccagcatct cggaggagga gcgcaagtac 840
atcgaggacg ccatcggaga gagcgcgaaa ctcatgaacc ccctcacgaa gtttagcact 900
ccctggcggc gcttcttcac gtctatgcca gtctatgcca tcatcgtggc caacttctgc 960
cgcagctgga cgttctacct gctgctcatc tcccagcccg cctacttcga agaagtgttc 1020
ggcttcgaga tcagcaaggt aggcctggtg tccgcgctgc cccacctggt catgaccatc 1080
atcgtgccca tcggcggcca gatcgcggac ttcctgcgga gccgccgcat catgtccacc 1140
accaacgtgc gcaagttgat gaactgcgga ggcttcggca tggaagccac gctgctgttg 1200
gtggtcggct actcgcactc caagggcgtg gccatctcct tcctggtcct agccgtgggc 1260
ttcagcggct tcgccatctc tgggttcaac gtgaaccacc tggacatagc cccgcgctac 1320
gccagcatcc tcatgggcat ctccaacggc gtgggcacac tgtcgggcat ggtgtgcccc 1380
atcatcgtgg gggccatgac taagcacaag actcgggagg agtggcagta cgtgttccta 1440
attgcctccc tggtgcacta tggaggtgtc atcttctacg gggtctttgc ttctggagag 1500
aagcagccgt gggcagagcc tgaggagatg agcgaggaga agtgtggctt cgttggccat 1560
```

```
gaccagctgg ctggcagtga cgacagcgaa atggaggatg aggctgagcc cccgggggca 1620
ccccctgcac ccccgccctc ctatggggcc acacacagca catttcagcc ccccaggccc 1680
ccacccctg tccgggacta ctgaccatgt gcctcccact gaatggcagt ttccaggacc 1740
tocattocac toatototgg cotgagtgac agtgtcaagg aaccotgoto otototgtcc 1800
tgcctcaggc ctaagaagca ctctcccttg ttcccagtgc tgtcaaatcc tctttccttc 1860
ccaattgcct ctcaggggta gtgaagctgc agactgacag tttcaaggat acccaaattc 1920
ccctaaaggt tccctctcca cccgttctgc ctcagtggtt tcaaatctct cctttcaggg 1980
ctttatttga atggacagtt cgacctctta ctctctcttg tggttttgaq qcacccacac 2040
cccccgcttt cctttatctc cagggactct caggctaacc tttgagatca ctcagctccc 2100
atctcctttc agaaaaattc aaggtcctcc tctagaagtt tcaaatctct cccaactctg 2160
ttctgcatct tccagattgg tttaaccaat tactcgtccc cgccattcca gggattgatt 2220
ctcaccagcg tttctgatgg aaaatggcgg tttcaagtcc ccgattccgt gcccacttca 2280
catctcccct accagcagat tctgcgaaag caccaaattt ctcaagaccc tcttctccct 2340
agcttagcat aatgtctggg gaaaca
<210> 2
<211> 560
<212> PRT
<213> Homo sapiens
<400>2
Met Glu Phe Arg Gln Glu Glu Phe Arg Lys Leu Ala Gly Arg Ala Leu
```

Gly Lys Leu His Arg Leu Leu Glu Lys Arg Gln Glu Gly Ala Glu Thr 25

Leu Glu Leu Ser Ala Asp Gly Arg Pro Val Thr Thr Gln Thr Arg Asp

Pro Pro Val Val Asp Cys Thr Cys Phe Gly Leu Pro Arg Arg Tyr Ile

Ile Ala Ile Met Ser Gly Leu Gly Phe Cys Ile Ser Phe Gly Ile Arg

Cys Asn Leu Gly Val Ala Ile Val Ser Met Val Asn Asn Ser Thr Thr 90

His Arg Gly Gly His Val Val Gln Lys Ala Gln Phe Ser Trp Asp 100 105 110

Pro Glu Thr Val Gly Leu Ile His Gly Ser Phe Phe Trp Gly Tyr Ile 120

Val Thr Gln Ile Pro Gly Gly Phe Ile Cys Gln Lys Phe Ala Ala Asn 130 135

Arg Val Phe Gly Phe Ala Ile Val Ala Thr Ser Thr Leu Asn Met Leu 150 155

Ile Pro Ser Ala Ala Arg Val His Tyr Gly Cys Val Ile Phe Val Arg 165 170

Ile Leu Gln Gly Leu Val Glu Gly Val Thr Tyr Pro Ala Cys His Gly 180 185

Ile Trp Ser Lys Trp Ala Pro Pro Leu Glu Arg Ser Arg Leu Ala Thr 195 200 Thr Ala Phe Cys Gly Ser Tyr Ala Gly Ala Val Val Ala Met Pro Leu Ala Gly Val Leu Val Gln Tyr Ser Gly Trp Ser Ser Val Phe Tyr Val 230 235 Tyr Gly Ser Phe Gly Ile Phe Trp Tyr Leu Phe Trp Leu Leu Val Ser 250 Tyr Glu Ser Pro Ala Leu His Pro Ser Ile Ser Glu Glu Glu Arg Lys Tyr Ile Glu Asp Ala Ile Gly Glu Ser Ala Lys Leu Met Asn Pro Leu Thr Lys Phe Ser Thr Pro Trp Arg Arg Phe Phe Thr Ser Met Pro Val Tyr Ala Ile Ile Val Ala Asn Phe Cys Arg Ser Trp Thr Phe Tyr Leu Leu Leu Ile Ser Gln Pro Ala Tyr Phe Glu Glu Val Phe Gly Phe Glu 330 Ile Ser Lys Val Gly Leu Val Ser Ala Leu Pro His Leu Val Met Thr Ile Ile Val Pro Ile Gly Gly Gln Ile Ala Asp Phe Leu Arg Ser Arg Arg Ile Met Ser Thr Thr Asn Val Arg Lys Leu Met Asn Cys Gly Gly 375 Phe Gly Met Glu Ala Thr Leu Leu Leu Val Val Gly Tyr Ser His Ser 390 395 Lys Gly Val Ala Ile Ser Phe Leu Val Leu Ala Val Gly Phe Ser Gly 410 Phe Ala Ile Ser Gly Phe Asn Val Asn His Leu Asp Ile Ala Pro Arg 425 Tyr Ala Ser Ile Leu Met Gly Ile Ser Asn Gly Val Gly Thr Leu Ser 435 440 Gly Met Val Cys Pro Ile Ile Val Gly Ala Met Thr Lys His Lys Thr 455 Arg Glu Glu Trp Gln Tyr Val Phe Leu Ile Ala Ser Leu Val His Tyr

Gly Gly Val Ile Phe Tyr Gly Val Phe Ala Ser Gly Glu Lys Gln Pro

490

470

485

465

Trp Ala Glu Pro Glu Glu Met Ser Glu Glu Lys Cys Gly Phe Val Gly 500 505 510

His Asp Gln Leu Ala Gly Ser Asp Asp Ser Glu Met Glu Asp Glu Ala 515 520 525

Glu Pro Pro Gly Ala Pro Pro Ala Pro Pro Pro Ser Tyr Gly Ala Thr 530 535 540

His Ser Thr Phe Gln Pro Pro Arg Pro Pro Pro Val Arg Asp Tyr 545 550 555 560

<210> 3 <211> 2716 <212> DNA <213> Homo sapiens

<400> 3

cgataagctt gatatcgaat tccggactct tgctcgggcg ccttaacccg gcgttcggtt 60 catcccgcag cgccagttct gcttaccaaa agtggcccac taggcactcg cattccacgc 120 ccggctccac gccagcgagc cgggcttctt acccatttaa agtttgagaa taggttgaga 180 tegtttegge eccaagacet etaateatte getttacegg ataaaactge gtggeggggg 240 tgcgtcgggt ctgcgagagc gccagctatc ctgagggaaa cttcggaggg aaccagctac 300 tagatggttc gattagtctt tcgcccctat acccaggtcg gacgaccgat ttgcacgtca 360 ggaccgctac ggacctccac cagagtttcc tctggcttcg ccctgcccag gcgatcggcq 420 ggggggaccc gcggggtgac cggcggcagg agccgccacc atggagttcc gccaggagga 480 gtttcggaag ctagcgggtc gtgctctcgg gaagctgcac cgccttctgg agaagcggca 540 ggaaggegeg gagaegetgg agetgagtge ggatgggege ceggtgaeca egeagaeceg 600 ggaccegceg gtggtggact gcacctgctt cggcctccct cgccgctaca ttatcgccat 660 catgagtggt ctgggcttct gcatcagctt tggcatccgc tgcaacctgg gcgtggccat 720 cgtctccatg gtcaataaca gcacgaccca ccgcgggggc cacgtggtgg tgcagaaagc 780 ccagttcagc tgggatccag agactgtcgg cctcatacac ggctcctttt tctggggcta 840 cattgtcact cagattccag gaggatttat ctgtcaaaaa tttgcagcca acagagtttt 900 eggetttget attgtggcaa catecaetet aaacatgetg atcceetcag etgeeegegt 960 ccactatggc tgtgtcatct tcgtgaggat cctgcagggg ttggtagagg gggtcacata 1020 ccccgcctgc catgggatct ggagcaaatg ggccccaccc ttagaacgga gtcgcctggc 1080 gacgacagcc ttttgtggtt cctatgctgg ggcggtggtc gcgatgcccc tcgccggggt 1140 ccttgtgcag tactcaggat ggagctctgt tttctacgtc tacggcagct tcgggatctt 1200 ctggtacctg ttctggctgc tcgtctccta cgagtccccc gcgctgcacc ccagcatctc 1260 ggaggaggag cgcaagtaca tcgaggacgc catcggagag agcgcgaaac tcatgaaccc 1320 cctcacgaag tttagcactc cctggcggcg cttcttcacg tctatgccag tctatgccat 1380 catcgtggcc aacttctgcc gcagctggac gttctacctg ctgctcatct cccagcccga 1440 ctacttcgaa gaagtgttcg gcttcgagat cagcaaggta ggcctggtgt ccgcgctgcc 1500 ccacctggtc atgaccatca tcgtgcccat cggcggccag atcgcggact tcctgcggag 1560 ccgccgcatc atgtccacca ccaacgtgcg caagttgatg aactgcggag gcttcggcat 1620 ggaagccacg ctgctgttgg tggtcggcta ctcgcactcc aagggcgtgg ccatctcctt 1680 cctggtccta gccgtgggct tcagcggctt cgccatctct gggttcaacg tgaaccacct 1740 ggacatagcc ccgcgctacg ccagcatcct catgggcatc tccaacggcg tgggcacact 1800 gtcgggcatg gtgtgcccca tcatcgtggg ggccatgact aagcacaaga ctcgggagga 1860 gtggcagtac gtgttcctaa ttgcctccct ggtgcactat ggaggtgtca tcttctacgg 1920

ggtctttgct tctggagaga agcagccgtg ggcagagcct gaggagatga gcgaggagaa 1980

```
gtgtggcttc gttggccatg accagctggc tggcagtgac gacagcgaaa tggaggatga 2040
ggctgagccc ccgggggcac cccctgcacc cccgccctcc tatggggcca cacacagcac 2100
atttcagccc cccaggcccc cacccctgt ccgggactac tgaccatgtg cctcccactg 2160
aatggcagtt tccaggacct ccattccact catctctggc ctgagtgaca gtgtcaagga 2220
accotgetee tetetgteet geeteaggee taagaageae tetecettgt teeeagtget 2280
gtcaaatcct ctttccttcc caattgcctc tcaggggtag tgaagctgca gactgacagt 2340
ttcaaggata cccaaattcc cctaaaggtt ccctctccac ccgttctgcc tcagtggttt 2400
caaatctctc ctttcagggc tttatttgaa tggacagttc gacctcttac tctctcttgt 2460
ggttttgagg cacccacacc ccccgctttc ctttatctcc agggactctc aggctaacct 2520
ttgagatcac tcagctccca tctcctttca gaaaaattca aggtcctcct ctagaagttt 2580
caaatctctc ccaactctgt tctgcatctt ccagattggt ttaaccaatt actcgtcccc 2640
gccattccag ggattgattc tcaccagcgt ttctgatgga aaatggcggg aattcctgca 2700
gcccggggga tccact
<210> 4
<211> 560
<212> PRT
```

<213> Homo sapiens

<400> 4

Met Glu Phe Arg Gln Glu Glu Phe Arg Lys Leu Ala Gly Arg Ala Leu

Gly Lys Leu His Arg Leu Leu Glu Lys Arg Gln Glu Gly Ala Glu Thr

Leu Glu Leu Ser Ala Asp Gly Arg Pro Val Thr Thr Gln Thr Arg Asp

Pro Pro Val Val Asp Cys Thr Cys Phe Gly Leu Pro Arg Arg Tyr Ile

Ile Ala Ile Met Ser Gly Leu Gly Phe Cys Ile Ser Phe Gly Ile Arg

Cys Asn Leu Gly Val Ala Ile Val Ser Met Val Asn Asn Ser Thr Thr 90

His Arg Gly Gly His Val Val Gln Lys Ala Gln Phe 'Ser Trp Asp 100 105 110

Pro Glu Thr Val Gly Leu Ile His Gly Ser Phe Phe Trp Gly Tyr Ile 120

Val Thr Gln Ile Pro Gly Gly Phe Ile Cys Gln Lys Phe Ala Ala Asn 130 135

Arg Val Phe Gly Phe Ala Ile Val Ala Thr Ser Thr Leu Asn Met Leu

Ile Pro Ser Ala Ala Arg Val His Tyr Gly Cys Val Ile Phe Val Arg

Ile Leu Gln Gly Leu Val Glu Gly Val Thr Tyr Pro Ala Cys His Gly 185

Ile Trp Ser Lys Trp Ala Pro Pro Leu Glu Arg Ser Arg Leu Ala Thr 195 200 205

Thr Ala Phe Cys Gly Ser Tyr Ala Gly Ala Val Val Ala Met Pro Leu 210 215 220

Ala Gly Val Leu Val Gln Tyr Ser Gly Trp Ser Ser Val Phe Tyr Val 225 230 235 240

Tyr Gly Ser Phe Gly Ile Phe Trp Tyr Leu Phe Trp Leu Leu Val Ser 245 250 255

Tyr Glu Ser Pro Ala Leu His Pro Ser Ile Ser Glu Glu Glu Arg Lys 260 265 270

Tyr Ile Glu Asp Ala Ile Gly Glu Ser Ala Lys Leu Met Asn Pro Leu 275 280 285

Thr Lys Phe Ser Thr Pro Trp Arg Arg Phe Phe Thr Ser Met Pro Val 290 295 300

Tyr Ala Ile Ile Val Ala Asn Phe Cys Arg Ser Trp Thr Phe Tyr Leu 305 310 315 320

Leu Leu Ile Ser Gln Pro Asp Tyr Phe Glu Glu Val Phe Gly Phe Glu 325 330 335

Ile Ser Lys Val Gly Leu Val Ser Ala Leu Pro His Leu Val Met Thr 340 345 350

Ile Ile Val Pro Ile Gly Gly Gln Ile Ala Asp Phe Leu Arg Ser Arg
355 360 365

Arg Ile Met Ser Thr Thr Asn Val Arg Lys Leu Met Asn Cys Gly Gly 370 375 380

Phe Gly Met Glu Ala Thr Leu Leu Leu Val Val Gly Tyr Ser His Ser 385 390 395 400

Lys Gly Val Ala Ile Ser Phe Leu Val Leu Ala Val Gly Phe Ser Gly 405 410 415

Phe Ala Ile Ser Gly Phe Asn Val Asn His Leu Asp Ile Ala Pro Arg 420 425 430

Tyr Ala Ser Ile Leu Met Gly Ile Ser Asn Gly Val Gly Thr Leu Ser 435 440 445

Gly Met Val Cys Pro Ile Ile Val Gly Ala Met Thr Lys His Lys Thr 450 455 460

Arg Glu Glu Trp Gln Tyr Val Phe Leu Ile Ala Ser Leu Val His Tyr 465 470 475 480

Gly Gly Val Ile Phe Tyr Gly Val Phe Ala Ser Gly Glu Lys Gln Pro

485 490 495

Trp Ala Glu Pro Glu Glu Met Ser Glu Glu Lys Cys Gly Phe Val Gly 500 505 510

His Asp Gln Leu Ala Gly Ser Asp Asp Ser Glu Met Glu Asp Glu Ala 515 520 525

Glu Pro Pro Gly Ala Pro Pro Ala Pro Pro Pro Ser Tyr Gly Ala Thr 530 535 540

His Ser Thr Phe Gln Pro Pro Arg Pro Pro Pro Val Arg Asp Tyr 545 550 555 560

<210> 5 <211> 2024 <212> DNA <213> Rattus norvegicus

<400> 5

gacgcggccg cccgggcccg cgggcggggg gattggcagg ggacccgcgt gggcacagcc 120 accatggagt teeggeagga ggagtttegg aagetggegg ggegegeett ggggaggetg 180 caccggttac tggagaagcg gcaggaaggc gcggagacat tggagctgag cgccgacggg 240 cgcccagtga ccacacaca gcgggacccg ccggtggtgg actgcacttg ctttggcctc 300 cctcgccgct acatcatcgc gatcatgagc ggtctgggtt tctqcatcag ctttqqcatc 360 cgctgcaacc tgggcgtggc catcgtatcc atggtcaaca acagtacaac ccaccgtggg 420 ggccacgtgg tggtgcagaa agcccagttc aactgggatc cagagactgt cggcctcata 480 catggctcct ttttctgggg gtacattgtc actcagattc ctggaggatt tatctgccaa 540 aaattegeag ccaacagggt etttggettt gecattgtgg etaceteeac ectaaatatg 600 ttgatccctt cagcagcccg tgttcactat ggctgtgtca tcttcgtgag gatccttcag 660 ggattggtgg agggggtcac ataccetgct tgccatggca tetggagcaa atgggeeect 720 cccttagaac ggagtcggct ggcgacgaca gccttttgcg gttcctatgc cggggcagtg 780 gttgccatgc ctctggctgg ggtcctggta cagtattcag gatggagttc tgtcttctat 840 gtctatggca gcttcgggat cttttggtac ctgttctggt tgcttgtctc ctacgagtca 900 cctgcactac accccagcat ctccgaggag gagcgcaaat acattgagga tgccatcgga 960 gaaagcgcca agctcatgaa ccctgttacg aagtttaaca caccctggag gcgcttcttt 1020 acctccatge eggtetatge cateattgte gecaactttt geegeagetg gaetttetae 1080 ctgctcctca tctcccagcc cgcctacttt gaagaagtgt tcggctttga gatcagcaag 1140 gtgggactgg tgtcggcact gcctcacctt gtcatgacta tcatcgtacc catcggaggc 1200 cagatogoog acttootgog cagtogtoat ataatgtoca cgaccaatgt gogaaagotg 1260 atgaactgcg ggggtttcgg gatggaagct acgctgctgc tggtggtcgg atactcacac 1320 tccaagggcg tggccatctc cttcctggtc ctggctgtgg gcttcagtgg ctttgctatc 1380 tetgggttta acgtgaacca ettggacate geceetegat atgecageat ettgatggge 1440 atttccaatg gcgtgggcac actgtctggg atggtgtgcc ccatcatcgt gggtgcaatg 1500 accaagcaca agacgcggga ggagtggcag tacgtgttcc tcatagcctc cctggtgcac 1560 tatggaggtg tcatcttcta tggggtcttt gcttcgggag agaaacagcc gtgggcagag 1620 ccggaggaga tgagcgagga gaagtgtggc tttgttggcc acgaccagct ggctggcagt 1680 gacgaaagtg aaatggaaga cgaggttgag cccccggggg caccccccgc acctccgcct 1740 tectaegggg ceacacacag cacagtteag cetecaagge ecceacece tgteegggae 1800 tactgaccac gtgcctccca ctggtgggca gtttccagga cctccactcg atacacctct 1860 agcctaaacg gcagtgtcga ggaaccccac tcctctcctg cctcaggctt aagatgcaag 1920 tettecettg tgeccagtge tgtecgacca gecetetete etteteaact geetettgea 1980 ggggtgaagc tgcacactag cagtttcaag ctcgtgccga attc

2024

<210> 6

<211> 560

<212> PRT

<213> Rattus norvegicus

<400> 6

Met Glu Phe Arg Gln Glu Glu Phe Arg Lys Leu Ala Gly Arg Ala Leu

1 5 10 15

Gly Arg Leu His Arg Leu Leu Glu Lys Arg Gln Glu Gly Ala Glu Thr
20 25 30

Leu Glu Leu Ser Ala Asp Gly Arg Pro Val Thr Thr His Thr Arg Asp $35 \hspace{1.5cm} 40 \hspace{1.5cm} 45$

Pro Pro Val Val Asp Cys Thr Cys Phe Gly Leu Pro Arg Arg Tyr Ile
50 55 60

Ile Ala Ile Met Ser Gly Leu Gly Phe Cys Ile Ser Phe Gly Ile Arg
65 70 75 80

Cys Asn Leu Gly Val Ala Ile Val Ser Met Val Asn Asn Ser Thr Thr 85 90 95

His Arg Gly Gly His Val Val Gln Lys Ala Gln Phe Asn Trp Asp 100 105 110

Pro Glu Thr Val Gly Leu Ile His Gly Ser Phe Phe Trp Gly Tyr Ile 115 120 125

Val Thr Gln Ile Pro Gly Gly Phe Ile Cys Gln Lys Phe Ala Ala Asn 130 135 140

Arg Val Phe Gly Phe Ala Ile Val Ala Thr Ser Thr Leu Asn Met Leu 145 150 155 160

Ile Pro Ser Ala Ala Arg Val His Tyr Gly Cys Val Ile Phe Val Arg 165 170 175

Ile Leu Gln Gly Leu Val Glu Gly Val Thr Tyr Pro Ala Cys His Gly
180 185 190

Ile Trp Ser Lys Trp Ala Pro Pro Leu Glu Arg Ser Arg Leu Ala Thr 195 200 205

Thr Ala Phe Cys Gly Ser Tyr Ala Gly Ala Val Val Ala Met Pro Leu 210 215 220

Ala Gly Val Leu Val Gln Tyr Ser Gly Trp Ser Ser Val Phe Tyr Val 225 230 235 240

Tyr Gly Ser Phe Gly Ile Phe Trp Tyr Leu Phe Trp Leu Leu Val Ser 245 250 255

Tyr Glu Ser Pro Ala Leu His Pro Ser Ile Ser Glu Glu Glu Arg Lys 260 265 Tyr Ile Glu Asp Ala Ile Gly Glu Ser Ala Lys Leu Met Asn Pro Val 280 Thr Lys Phe Asn Thr Pro Trp Arg Arg Phe Phe Thr Ser Met Pro Val 295 300 Tyr Ala Ile Ile Val Ala Asn Phe Cys Arg Ser Trp Thr Phe Tyr Leu 305 310 Leu Leu Ile Ser Gln Pro Ala Tyr Phe Glu Glu Val Phe Gly Phe Glu Ile Ser Lys Val Gly Leu Val Ser Ala Leu Pro His Leu Val Met Thr 345 Ile Ile Val Pro Ile Gly Gly Gln Ile Ala Asp Phe Leu Arg Ser Arg His Ile Met Ser Thr Thr Asn Val Arg Lys Leu Met Asn Cys Gly Gly 375 Phe Gly Met Glu Ala Thr Leu Leu Leu Val Val Gly Tyr Ser His Ser 390 Lys Gly Val Ala Ile Ser Phe Leu Val Leu Ala Val Gly Phe Ser Gly Phe Ala Ile Ser Gly Phe Asn Val Asn His Leu Asp Ile Ala Pro Arg Tyr Ala Ser Ile Leu Met Gly Ile Ser Asn Gly Val Gly Thr Leu Ser 440 Gly Met Val Cys Pro Ile Ile Val Gly Ala Met Thr Lys His Lys Thr 455 Arg Glu Glu Trp Gln Tyr Val Phe Leu Ile Ala Ser Leu Val His Tyr 470 475 Gly Gly Val Ile Phe Tyr Gly Val Phe Ala Ser Gly Glu Lys Gln Pro 485 490 Trp Ala Glu Pro Glu Glu Met Ser Glu Glu Lys Cys Gly Phe Val Gly 505 His Asp Gln Leu Ala Gly Ser Asp Glu Ser Glu Met Glu Asp Glu Val 515 520 Glu Pro Pro Gly Ala Pro Pro Ala Pro Pro Pro Ser Tyr Gly Ala Thr 535

His Ser Thr Val Gln Pro Pro Arg Pro Pro Pro Pro Val Arg Asp Tyr

555

550

545

```
<210> 7
<211> 2836
<212> DNA
<213> Mus musculus
```

<400> 7 cggccgcccg ggcccgcggg cggggggatt ggcaggggac ccgcgtgggc acagccacca 60 tggagttccg gcaggaggag tttcggaagc tggcggggcg cgccctgggg aggctgcacc 120 ggttactgga gaagcgcag gaaggcgcgg agacactgga gctgagtgcc gacgggcggc 180 cagtgaccac gcacactegg gaccegectg tggtggactg cacctgettt ggcetecete 240 gtcgctacat catcgccatc atgagcggtc tgggtttctg tatcagcttt ggcatccgct 300 gcaacctggg cgtggccatc gtgtccatgg tcaacaacag cacaacccac cgtgggggcc 360 acgtggtggt gcagaaagcc cagttcaact gggatccaga gactgtcggc ctcatacatg 420 gctccttttt ctggggctac attgtcactc agattcctgg aggatttatc tgccaaaaat 480 tegeagecaa cagggtettt ggetttgeca ttgtggetae etceaeceta aacatgttga 540 tecetteage agecegegtt cactatgget gtgtcatett egtgaggate etteagggat 600 tggtggaggg ggtcacatac cctgcttgcc atggcatctg gagcaaatgg gcccctccct 660 tagaacggag teggetggea acgacageet tttgeggtte etatgetggg geggtggttg 720 ccatgccctt ggctggggtc cttgtgcagt attcaggatg gagttctgtc ttctatgtct 780 atggcagett egggatettt tggtacetgt tetggttget tgteteetat gagteaeegg 840 cactgcaccc cagcatctct gaggaggagc gcaaatacat tgaggatgcc atcggggaga 900 gcgccaagct catgaaccct gttacgaagt ttaacacacc ctggaggcgc ttctttacgt 960 ccatgcccgt ctatgccatc atcgttgcga acttttgccg cagctggacc ttctacctgc 1020 tecteatete teageeegee taetttgaag aagtgttegg etttgagate ageaaggtgg 1080 ggctggtgtc ggcgctgcct caccttgtca tgaccatcat cgtacccatt ggaggccaqa 1140 tcgctgactt tttgcgcagt cgtcacataa tgtccactac caacgtgcga aagctcatga 1200 actgcggggg tttcgggatg gaagccacgc tgctgctggt ggtcggatac tcgcactcca 1260 agggcgtggc catctccttc ctggtcctgg ctgtgggctt cagtggcttt gccatctctg 1320 ggtttaacgt gaaccacttg gacatcgccc ctcgctatgc cagcatcttg atgggcattt 1380 ccaatggcgt gggcacactg tctgggatgg tgtgccccat catcgtgggt gcaatgacca 1440 agcacaagac gcgggaggag tggcagtacg tgttcctcat agcctccctg gtgcactacg 1500 gcggtgtcat cttctatggg gtctttgctt cgggagagaa gcagccgtgg gcagagccgg 1560 aggagatgag cgaggagaag tgtggctttg ttggccacga ccagctggct ggcagtgacg 1620 aaagtgaaat ggaggacgag gctgagcccc caggggcgcc ccccgcgccg cctccgtcct 1680 acggggccac acacagcaca gtgcagcctc cgaggccccc gcccctgtc cgggactact 1740 gaccacgggc ctcccactgt ggggcagttt ccaggacttc cactccatac acctctagcc 1800 tgagcggcag tgtcgaggaa ccccactcct cccctgcctc aggcttaaga tgcaagtcct 1860 cccttgttcc cagtgctgtc cgaccagccc tctttccctc tcaactgcct cctgcggggg 1920 gtgaagctgc acactagcag tttcaaggat acccagactc ccctgaaagt cgttctccgc 1980 ttgtttctgc ctgtgtgggc tcaaatctcc cctttgaggg ctttatttgg agggacagtt 2040 caacctcttc ctctcttgtg gttttgaggt ttcacccctt cccccaagac cccagggatt 2100 ctcaggctac cccgagatta ttcaggtggt cccctactca gaagacttca tggtcgtcct 2160 ctattagttt caaggctcgc ctaaccaatt ctacattttt ccaagctggt ttaacctaac 2220 caccaatgcc gccgttccca ggactgattc tcaccagcgt ttctgaggga aaatggcggt 2280 ttcaagtccc cccacccccc ttttcttccc tcgtcccctc accagcacac tttgccgggc 2340 cttgacctta gcttagtaca atcattgtcc agggaaatgg ccaaaatggc tctgctcacc 2400 ccgtgctctt tttctgactc agttttcagg tctcagtagt ggctgcccaa agctattaat 2460 teageggete gaggeeacet etteeteece gtggtggttt caggateece etegeeece 2520 ccccccaaa tccttgcact ttattctcct gggtggttcc aggccgccct cggtttctca 2580 gtggccattt gttgtgtgtc cctcaggggc taaatgattc caaatctggg gtgcttcccc 2640 tcatagacac ccctctctca acgtagaaat ctgggtgggg gtgaggtgtg tgagagaagt 2700 tacagaatcc caggaaaggg agcggggctg ggaggagagg gttgttcctg gggcagggtc 2760 <210> 8 <211> 560 <212> PRT <213> Mus musculus <400> 8

Met Glu Phe Arg Gln Glu Glu Phe Arg Lys Leu Ala Gly Arg Ala Leu 1 5 10 15

Gly Arg Leu His Arg Leu Leu Glu Lys Arg Gln Glu Gly Ala Glu Thr 20 25 30

Leu Glu Leu Ser Ala Asp Gly Arg Pro Val Thr Thr His Thr Arg Asp 35 40 45

Pro Pro Val Val Asp Cys Thr Cys Phe Gly Leu Pro Arg Arg Tyr Ile 50 55 60

Ile Ala Ile Met Ser Gly Leu Gly Phe Cys Ile Ser Phe Gly Ile Arg
65 70 75 80

Cys Asn Leu Gly Val Ala Ile Val Ser Met Val Asn Asn Ser Thr Thr 85 90 95

His Arg Gly Gly His Val Val Gln Lys Ala Gln Phe Asn Trp Asp 100 105 110

Pro Glu Thr Val Gly Leu Ile His Gly Ser Phe Phe Trp Gly Tyr Ile 115 120 125

Val Thr Gln Ile Pro Gly Gly Phe Ile Cys Gln Lys Phe Ala Ala Asn 130 135 140

Arg Val Phe Gly Phe Ala Ile Val Ala Thr Ser Thr Leu Asn Met Leu 145 150 155 160

Ile Pro Ser Ala Ala Arg Val His Tyr Gly Cys Val Ile Phe Val Arg 165 170 175

Ile Leu Gln Gly Leu Val Glu Gly Val Thr Tyr Pro Ala Cys His Gly 180 185 190

Ile Trp Ser Lys Trp Ala Pro Pro Leu Glu Arg Ser Arg Leu Ala Thr
195 200 205

Thr Ala Phe Cys Gly Ser Tyr Ala Gly Ala Val Val Ala Met Pro Leu 210 215 220

Ala Gly Val Leu Val Gln Tyr Ser Gly Trp Ser Ser Val Phe Tyr Val 225 230 235 240

- Tyr Gly Ser Phe Gly Ile Phe Trp Tyr Leu Phe Trp Leu Leu Val Ser 245 250 255
- Tyr Glu Ser Pro Ala Leu His Pro Ser Ile Ser Glu Glu Glu Arg Lys 260 265 270
- Tyr Ile Glu Asp Ala Ile Gly Glu Ser Ala Lys Leu Met Asn Pro Val 275 280 285
- Thr Lys Phe Asn Thr Pro Trp Arg Arg Phe Phe Thr Ser Met Pro Val 290 295. 300
- Tyr Ala Ile Ile Val Ala Asn Phe Cys Arg Ser Trp Thr Phe Tyr Leu 305 310 315 320
- Leu Leu Ile Ser Gln Pro Ala Tyr Phe Glu Glu Val Phe Gly Phe Glu
 325 330 335
- Ile Ser Lys Val Gly Leu Val Ser Ala Leu Pro His Leu Val Met Thr 340 345 350
- Ile Ile Val Pro Ile Gly Gly Gln Ile Ala Asp Phe Leu Arg Ser Arg 355 360 365
- His Ile Met Ser Thr Thr Asn Val Arg Lys Leu Met Asn Cys Gly Gly 370 375 380
- Phe Gly Met Glu Ala Thr Leu Leu Leu Val Val Gly Tyr Ser His Ser 385 390 395 400
- Lys Gly Val Ala Ile Ser Phe Leu Val Leu Ala Val Gly Phe Ser Gly
 405 410 415
- Phe Ala Ile Ser Gly Phe Asn Val Asn His Leu Asp Ile Ala Pro Arg 420 425 430
- Tyr Ala Ser Ile Leu Met Gly Ile Ser Asn Gly Val Gly Thr Leu Ser 435 440 445
- Gly Met Val Cys Pro Ile Ile Val Gly Ala Met Thr Lys His Lys Thr 450 455 460
- Arg Glu Glu Trp Gln Tyr Val Phe Leu Ile Ala Ser Leu Val His Tyr 465 470 475 480
- Gly Gly Val Ile Phe Tyr Gly Val Phe Ala Ser Gly Glu Lys Gln Pro 485 490 495
- Trp Ala Glu Pro Glu Glu Met Ser Glu Glu Lys Cys Gly Phe Val Gly 500 505 510
- His Asp Gln Leu Ala Gly Ser Asp Glu Ser Glu Met Glu Asp Glu Ala 515 520 525
- Glu Pro Pro Gly Ala Pro Pro Ala Pro Pro Pro Ser Tyr Gly Ala Thr 530 535 540

His Ser Thr Val Gln Pro Pro Arg Pro Pro Pro Val Arg Asp Tyr 545 550 555 560

<210> 9 <211> 3946 <212> DNA <213> Homo sapiens <400> 9 cgtttaaaag ccatcagatt tgagagcaat aagtcttcaa aaccgggaat ttacattgtt 60 tttcagctga ccgacttcca ggaaaaggac tcaaccgcat ctacccaaat accgtggcac 120 tgcttgcgct ctttgccacc ggatactccc cttccaatga gactttctga ttgtgtctac 180 caactctcct attaggaaac ccgtgggttg catgcagcta ttctgttgta ttctcattct 240 cactetecet ecettetete acteteacte ttgetggagg egagecacta ecattetget 300 gagaaggaaa agcccgcaac tactttaaga gattaagaca atatgcgcaa tcctcgcctt 360 tcctagcaat cactatttaa atctggcaag aactgacaac agtctttgca agaatggaat 420 ccgtaaaaca aaggattttg gccccaggaa aagaggggct aaagaatttt gctggaaaat 480 cacteggeca gatetacagg gtgetggaga agaagcaaga caceggggag acaategage 540 tgacggagga tgggaagccc ctagaggtgc ccgagaggaa ggcgccgctg tgcgactgca 600 cgtgcttcgg cctgccccgc cgctacatta tcgccatcat gagcggcctg ggcttctgca 660 teteettegg tateegetge aacetgggeg tggecattgt ggacatggte aacaacagea 720 ccatccaccg cgggggcaag gtcatcaagg agaaagccaa attcaactgg gacccggaaa 780 ccgtggggat gatccacggt tccttctttt ggggctacat catcactcag attccgggag 840 gctacatcgc gtctcggctg gcagccaaca gggttttcgg agctgccata cttcttacct 900 ctaccctaaa tatgctaatt ccatcagcag ccagagtgca ttatggatgt gtcatctttg 960 tcagaatact gcagggactt gttgagggtg tgacctaccc agcatgtcat gggatatgga 1020 gcaaatgggc cccacctcta gagaggagta gactggcaac cacctccttt tgtggttcct 1080 atgccggagc tgtgattgca atgcctttag ctggcattct tgtgcagtac actggctggt 1140 cttcagtgtt ttatgtctac ggaagctttg gaatggtctg gtacatgttt tggcttttgg 1200 tgtcttatga aagtcctgca aagcatccta ctattacaga tgaagaacgt aggtacatag 1260 aagaaagcat tggagagagt gcaaatcttt taggtgcaat ggaaaaattc aagactccat 1320 ggaggaagtt ttttacatcc atgccagtct atgcaataat tgttgcaaac ttctgcagaa 1380 gctggacttt ttatttattg cttattagtc agccagcata ttttqaqqaa qtctttqqat 1440 ttgaaattag caaggttggt atgctatctg ctqtqccaca cttaqtaatq acaattattq 1500 tgcctattgg gggacaaatt gcagattttc taaqaaqcaa qcagattctt tcaactacqa 1560 cagtgagaaa gatcatgaat tqtqqtqqtt ttqqcatqqa aqccacactq ctcctqqtcq 1620 ttggctattc tcatactaga ggggtagcaa tctcattctt ggtacttgca gtgggattca 1680 gtggatttgc tatatctggt ttcaatgtta accacttgga tatcqctcca agatatqcca 1740 gtatcttaat gggcatttcg aatggtgttg gcacattgtc aggaatggtt tgtcctatca 1800 ttgttggtgc aatgacaaag aataagtcac gtgaagagtg gcagtatgtc ttcctgatcg 1860 ctgccctagt ccactatggt ggagttatat tttatgcaat atttgcctca ggagagaaac 1920 aaccctgggc agacccggag gaaacaagtg aagaaaaatg tggatttatt catgaagatg 1980 aactcgatga agaaacaggg gacattactc aaaattatat aaattatggt accaccaagt 2040 cttatggtgc cacaacacag gccaatggag gttggcctag tggttgggaa aagaaagagg 2100 aatttgtaca aggagaagta caagactcac atagctataa ggaccgagtt gattattcat 2160 aacaaaacta attactggat ttatttttag tgtttgtgat taaattcatt gtgattgcac 2220 aaaaatttta aaaacacgtg atgtaaactt gcaagcatat caaccaggca agtcttgctg 2280 taaaaatgaa aacaaaacaa acccatgagg ttaccatcaa gtgcaatctg taaaattgtg 2340 aagttccatc atttccattc aagtcatcca ttcttgcatt tgtgacttaa aggttgactg 2400 gtcaaaattg tagaaacaag tagttaccca ttggattcat atgagctaaa actcatcact 2460 atttactaaa gcacaacatc tcatcctaca aaagttaaga agccaaagct acttgatcat 2520

gcaaaatgca cttatatatt tgttacactg tattgcaaga tagcacacag aagttggctg 2580

```
cgtcaagtag aggcgacatt tattaagtga aaatcatgga gttgggatat ctctcaatta 2640
aagaaataca ttgtgaacta tcagctacaa agttgtactg aataactatt agaattgcat 2700
aatgtgagat attttgttag tcctcaaaag gaatatcttg cagtgttttc tatgaaatgc 2760
ttgggcacaa acacttattt ctgtgaaaga gaacatgtaa gttgaggggt atgcttcatg 2820
ttcttccatc catttaccta atagtatgaa acagttcaca tttcaataaa atcaaacttt 2880
tcatgtagcg tatcacataa cttttttgca aaaaatataa aaagaaataa acttcaatgt 2940
attitttatt acaactitgt actggttgta acttgcatta gaaaaaaaaa agagatatat 3000
aaaccacaaa gaatctaata agaaatttat tatggagata tagcccttaa aatgcaatat 3060
taagaacaaa gaaatagaaa atggtttaga tatctttctt ccttcataat taaatactat 3120
atgaaacttg tgccacagag ctatatgtaa tatgaaaaga ttaacttcat agagatattg 3180
taagtaggta attttattat ttaaagtcct attaagaaat atttgtctta aatatatagg 3240
acaatacatt atattaaaat ggtctctctc tatatatatc tgtatatctt atacatgtcc 3300
atacacagaa acataataaa caatcttcac acgaaaccaa aaatagcata cacctaatgt 3360
tgggttaggg aattgcaatt tctactttca tagagtcata gaattttagg tggggaagag 3420
gcattttgct tgtcatttct taatataact caacaagaat tgcaacattt gtgtaccaag 3480
caataagtgc aatgcataaa atttcctgtc tgtatattac cttcattttg cttgtagtag 3540
ctgtttgggt ggttggaata attttatttt tcttttaaaa aagctaacat cagacccctt 3600
tataatgtcc taaaattatg ataatacatt tcccaattca actcaaaata ttattggtgt 3660
attttgtcta ttctggatat ttgatctgtt taatgtactg tgctagtgac tggaggccct 3720
gctactgcaa atataaaacc taaagtttgt ttaaaaaaaat gcaaatcatt ctttacctta 3780
agaaaaaaaa aatacccttt gctttgtgcc tcaaagtgat gtaatgtgat cacagctttt 3840
gttgtgttga atgaaaatat gtggactgtc attttgttgc agcaaaaaag tgttaataaa 3900
atgctctatt tatccttttt taaaaaaaaa aaaaaaaaa aaaaaa
```

```
<210> 10
<211> 582
<212> PRT
<213> Homo sapiens
<400> 10
Met Glu Ser Val Lys Gln Arg Ile Leu Ala Pro Gly Lys Glu Gly Leu
Lys Asn Phe Ala Gly Lys Ser Leu Gly Gln Ile Tyr Arg Val Leu Glu
Lys Lys Gln Asp Thr Gly Glu Thr Ile Glu Leu Thr Glu Asp Gly Lys
                             40
Pro Leu Glu Val Pro Glu Arg Lys Ala Pro Leu Cys Asp Cys Thr Cys
Phe Gly Leu Pro Arg Arg Tyr Ile Ile Ala Ile Met Ser Gly Leu Gly
                                         75
Phe Cys Ile Ser Phe Gly Ile Arg Cys Asn Leu Gly Val Ala Ile Val
                                     90
Asp Met Val Asn Asn Ser Thr Ile His Arg Gly Gly Lys Val Ile Lys
            100
                                105
Glu Lys Ala Lys Phe Asn Trp Asp Pro Glu Thr Val Gly Met Ile His
        115
                            120
Gly Ser Phe Phe Trp Gly Tyr Ile Ile Thr Gln Ile Pro Gly Gly Tyr
```

135

130

Ile Ala Ser Arg Leu Ala Ala Asn Arg Val Phe Gly Ala Ala Ile Leu Leu Thr Ser Thr Leu Asn Met Leu Ile Pro Ser Ala Ala Arg Val His Tyr Gly Cys Val Ile Phe Val Arg Ile Leu Gln Gly Leu Val Glu Gly Val Thr Tyr Pro Ala Cys His Gly Ile Trp Ser Lys Trp Ala Pro Pro Leu Glu Arg Ser Arg Leu Ala Thr Thr Ser Phe Cys Gly Ser Tyr Ala Gly Ala Val Ile Ala Met Pro Leu Ala Gly Ile Leu Val Gln Tyr Thr Gly Trp Ser Ser Val Phe Tyr Val Tyr Gly Ser Phe Gly Met Val Trp Tyr Met Phe Trp Leu Leu Val Ser Tyr Glu Ser Pro Ala Lys His Pro Thr Ile Thr Asp Glu Glu Arg Arg Tyr Ile Glu Glu Ser Ile Gly Glu Ser Ala Asn Leu Leu Gly Ala Met Glu Lys Phe Lys Thr Pro Trp Arg Lys Phe Phe Thr Ser Met Pro Val Tyr Ala Ile Ile Val Ala Asn Phe Cys Arg Ser Trp Thr Phe Tyr Leu Leu Leu Ile Ser Gln Pro Ala Tyr Phe Glu Glu Val Phe Gly Phe Glu Ile Ser Lys Val Gly Met Leu Ser Ala Val Pro His Leu Val Met Thr Ile Ile Val Pro Ile Gly Gly Gln Ile Ala Asp Phe Leu Arg Ser Lys Gln Ile Leu Ser Thr Thr Val Arg Lys Ile Met Asn Cys Gly Gly Phe Gly Met Glu Ala Thr Leu Leu Leu Val Val Gly Tyr Ser His Thr Arg Gly Val Ala Ile Ser Phe Leu Val Leu Ala Val Gly Phe Ser Gly Phe Ala Ile Ser Gly Phe Asn Val Asn His Leu Asp Ile Ala Pro Arg Tyr Ala Ser Ile Leu Met Gly Ile

435 440 445 Ser Asn Gly Val Gly Thr Leu Ser Gly Met Val Cys Pro Ile Ile Val Gly Ala Met Thr Lys Asn Lys Ser Arg Glu Glu Trp Gln Tyr Val Phe 465 470 Leu Ile Ala Ala Leu Val His Tyr Gly Gly Val Ile Phe Tyr Ala Ile 490 Phe Ala Ser Gly Glu Lys Gln Pro Trp Ala Asp Pro Glu Glu Thr Ser 500 505 510 Glu Glu Lys Cys Gly Phe Ile His Glu Asp Glu Leu Asp Glu Glu Thr Gly Asp Ile Thr Gln Asn Tyr Ile Asn Tyr Gly Thr Thr Lys Ser Tyr Gly Ala Thr Thr Gln Ala Asn Gly Gly Trp Pro Ser Gly Trp Glu Lys 545 Lys Glu Glu Phe Val Gln Gly Glu Val Gln Asp Ser His Ser Tyr Lys 570 Asp Arg Val Asp Tyr Ser 580 <210> 11 <211> 3982 <212> DNA <213> Rattus norvegicus <400> 11 agacagtaag gttcttttgc ttttttccct tacacaagga ttcgatgacg tttttggtca 60 atctgattaa aagacagcgg atttggttgc gttaagactt caaaaccggg aatttacgtt 120 gtttttcggt gaggtgactt ccagaacggg gactcatcag cacccgccca aataccacgg 180 cactgegege geoeteggee aceggatect eccetteeaa tgagaetttg tgaetgtgtg 240 taccaattct cctattagga aacccgtggg ctgaatgcag ctattccgtt gtactctctt 300 tetegetete ceteceetet ceaacteaca geettgetga aaageteate tetgetgaga 360 agaaaacgtt ctaccttaac ctattaagac tatgcgcaqa actcgccttt catagccatc 420 acaatttaaa totggtaagg otggacacga gtotttacaa gaatggagto ggtaaaacaa 480 aggattttgg ccccggggaa agaggggata aagaattttg ctggaaaatc cctcggacag 540 atctacaggg tgctggagaa gaagcaggat aaccgagaga ccatcgagct gacagaggac 600 ggcaagcccc tggaggtgcc tgagaagaag gctccgctat gcgactgtac gtgcttcggc 660 ctgccgcgcc gctacatcat agccatcatg agcggcctcg gcttctgcat ctcctttggt 720 atcogctgta acctgggtgt ggccattgtg gacatggtca acaacagcac catccaccgg 780 ggtggcaaag ttatcaagga gaaagccaag tttaactggg accccgagac tgtggggatg 840 attcacgggt cgttcttctg gggctatatc atcacgcaga ttccgggcgg atacatcgca 900 tegegactgg etgetaaceg ggtetttggg getgecatae tgettaeete tacceteaat 960 atgctgatcc catctgcagc cagagtgcat tatggatgcg tcatctttgt tagaatattg 1020 caaggacttg tggagggcgt cacctaccca gcctgtcacg ggatatggag caagtgggcc 1080 cctcctttgg agaggagtag gttggctacc acctccttct gtggttccta tgctggagca 1140 gtcattgcaa tgcccctagc tggtatcctg gtgcagtaca ctggatggtc ttcagtattt 1200

```
tacgtatatg gaagctttgg tatggtctgg tatatgttct ggcttctggt gtcttacgag 1260
agccccgcaa agcatccaac cataacagac gaagaacgta ggtacataga agagagcatc 1320
ggggagagcg caaatctgtt aggagcaatg gagaaattca agaccccatg gaggaagttt 1380
ttcacatcca tgcccgtcta tgcgataatt gttgcaaact tctgcaggag ttggactttt 1440
tatttactgc tcatcagtca accagcttat ttcgaggagg tttttggatt tgaaatcagc 1500
aaggttggca tgttgtctgc ggtcccacac ctggtcatga caatcattgt gcctatcggg 1560
gggcaaattg cagactttct aaggagcaag caaattcttt caacaactac agtgcgaaag 1620
atcatgaact gegggggttt tggcatggaa gccacactgc ttctggttgt tggctactct 1680
catactagag gggtggccat ctccttcttg gtgcttgcag tgggattcag tggatttgct 1740
atctctggtt tcaatgtgaa ccacttggat attgccccga gatatgccag tatcttaatq 1800
ggcatttcaa atggtgttgg cacgctgtcg ggaatggtct gcccgatcat tgttggtgca 1860
atgacgaaga acaagtcccg tgaagaatgg cagtatgtct tcctcatcgc tgcactggtc 1920
cactatggtg gagtcatatt ttatgcacta tttgcctcag gagagaagca accttgggca 1980
gaccctgagg aaacaagcga agaaaagtgt ggcttcattc atgaagatga actggatgaa 2040
gaaacggggg acatcactca gaattacata aattacggta ccaccaaatc ctacggcgcc 2100
acctcacagg agaacggagg ctggcctaac ggctgggaga aaaaggaaga atttgtgcaa 2160
gaaagtgcgc aagacgcgta ctcctataag gaccgagatg attattcata acgaagctag 2220
ttgctggatt cctttgtagt gtttgtgatt aaattaattg tgattgcaca aaatcatttt 2280
aagaaatgtg gtgtaaacat gtaaacacat caaccaagca agtcttgctg ttcaaaaaat 2340
aataataata tgaattcaaa acagaccgtg agagtcccat caagtgcaat ctgtggcggc 2400
agtcacgtga cgccatttcc attcaggcca ttcgtccttt tcgtttgtga tttaaaggtt 2460
tcctgtagaa ataagtaggt attcgttgga tccatcacca cgttagagag tacaactaca 2520
acagttggca catgtcatcc tacggaagtt aggaagccaa agctactgga ttatgtgaac 2580
tgcatttatt tatttattac actggactgc aaaatatccc agggaaatcc tgtctagaga 2640
catagtagaa ctggaaagat ggctagattg ggtactgacg ataatcattg tgtgtatatc 2700
atggagtggc tatatctttt aattggagaa ctatattgta tagctagcaa aattgtactg 2760
aattattact aggagtgcac agtgtgtgat attttgtgat cttccaaaag cttatcttgc 2820
agtgttttgt gaaacgcttg ggcacaaaca cttattttta tgaacaagag cttgtaaagg 2880
gaggagtatg ctccatgctc tcccattcac tacctgacag tatcaaacct tcacatttca 2940
atgaaatcca acgtccatgt aacatatcac atgacttttt ttgcaaaaaa qaatataaqa 3000
agaaatagac ttcaatgtat tttttattac aactttgtac tggttgtaac ttgcattagg 3060
aaaaatgatt aatatatgta taatcgtaaa gaatctaata aaaatttact atgaagatat 3120
agcccttaaa atgcaatatt aacaacaaaa atatatagaa aatttagata atcttccttg 3180
ataactagag actatatgga actcacacca caaagctata tataatatga aaagataaac 3240
aatagagatt gtatatgtag acgattttat gacctaatgt cccatttaag aggtatttgt 3300
cttgagtata tagtacaaag tatattaaaa ttatatctac atccctgtat atcttataca 3360
tatccactca cacaaacata acaaatactt ttcacacaga accaaaaaca agcatacacc 3420
taatgttggg tttggggatt gcaatttcta ctttcataga gtcatagaat tttagatggg 3480
aaaaaaaaag gcattttgct cgtcatttct taatataatt aattcaacag gaactgcaac 3540
atttgtgtac caagcaataa gtgcgaagca taaacctgct gtgtgtaaac tatccccata 3600
ctgcttgtgg tagcactgat ttctttcttt taaagaactt aacatcggag ctctttacaa 3660
tgttttgcgc tgataagaat gcacatccca atttaacgca aagtgtcacc tggtgtgttt 3720
acctgtctgt tttgggtatt tggtctgttt ggtgtcctgt gctcttgact ggaggccctg 3780
ctactgcgaa tataaaacgt gaagtttgtt tctaaatgca aaccactcct gaccttaaga 3840
aactaaagtc cctctctgct ttgtgtctcc aagtactatc atgtgaccat aacccttgct 3900
gtgctgagta aaaagatgtg aactgtcatt ttgttgctgc gaagcaagtg ttaataaaat 3960
gttctattta aaaaaaaaaa aa
                                                                  3982
<210> 12
<211> 582
<212> PRT
```

<213> Rattus norvegicus
<400> 12
Met Glu Ser Val Lys Gln Arg Ile Leu Ala Pro Gly Lys Glu Gly Ile
1 5 10 15

- Lys Asn Phe Ala Gly Lys Ser Leu Gly Gln Ile Tyr Arg Val Leu Glu
 20 25 30

 Lys Lys Gln Asp Asn Arg Glu Thr Ile Glu Leu Thr Glu Asp Gly Lys
 35 40 45
- Pro Leu Glu Val Pro Glu Lys Lys Ala Pro Leu Cys Asp Cys Thr Cys 50 55 60
- Phe Gly Leu Pro Arg Arg Tyr Ile Ile Ala Ile Met Ser Gly Leu Gly 65 70 75 80
- Phe Cys Ile Ser Phe Gly Ile Arg Cys Asn Leu Gly Val Ala Ile Val 85 90 95
- Asp Met Val Asn Asn Ser Thr Ile His Arg Gly Gly Lys Val Ile Lys
 100 105 110
- Glu Lys Ala Lys Phe Asn Trp Asp Pro Glu Thr Val Gly Met Ile His
 115 120 125
- Gly Ser Phe Phe Trp Gly Tyr Ile Ile Thr Gln Ile Pro Gly Gly Tyr 130 135 140
- Ile Ala Ser Arg Leu Ala Ala Asn Arg Val Phe Gly Ala Ala Ile Leu 145 150 155 160
- Leu Thr Ser Thr Leu Asn Met Leu Ile Pro Ser Ala Ala Arg Val His
 165 170 175
- Tyr Gly Cys Val Ile Phe Val Arg Ile Leu Gln Gly Leu Val Glu Gly
 180 185 190
- Val Thr Tyr Pro Ala Cys His Gly Ile Trp Ser Lys Trp Ala Pro Pro 195 200 205
- Leu Glu Arg Ser Arg Leu Ala Thr Thr Ser Phe Cys Gly Ser Tyr Ala 210 215 220
- Gly Ala Val Ile Ala Met Pro Leu Ala Gly Ile Leu Val Gln Tyr Thr 225 230 235 240
- Gly Trp Ser Ser Val Phe Tyr Val Tyr Gly Ser Phe Gly Met Val Trp
 245 250 255
- Tyr Met Phe Trp Leu Leu Val Ser Tyr Glu Ser Pro Ala Lys His Pro 260 265 270
- Thr Ile Thr Asp Glu Glu Arg Arg Tyr Ile Glu Glu Ser Ile Gly Glu 275 280 285
- Ser Ala Asn Leu Gly Ala Met Glu Lys Phe Lys Thr Pro Trp Arg 290 295 300
- Lys Phe Phe Thr Ser Met Pro Val Tyr Ala Ile Ile Val Ala Asn Phe 305 310 315 320

Cys Arg Ser Trp Thr Phe Tyr Leu Leu Leu Ile Ser Gln Pro Ala Tyr 325 330 335

Phe Glu Glu Val Phe Gly Phe Glu Ile Ser Lys Val Gly Met Leu Ser 340 345 350

Ala Val Pro His Leu Val Met Thr Ile Ile Val Pro Ile Gly Gly Gln 355 360 365

Ile Ala Asp Phe Leu Arg Ser Lys Gln Ile Leu Ser Thr Thr Thr Val 370 375 380

Arg Lys Ile Met Asn Cys Gly Gly Phe Gly Met Glu Ala Thr Leu Leu 385 390 395 400

Leu Val Val Gly Tyr Ser His Thr Arg Gly Val Ala Ile Ser Phe Leu
405 410 415

Val Leu Ala Val Gly Phe Ser Gly Phe Ala Ile Ser Gly Phe Asn Val 420 425 430

Asn His Leu Asp Ile Ala Pro Arg Tyr Ala Ser Ile Leu Met Gly Ile 435 440 445

Ser Asn Gly Val Gly Thr Leu Ser Gly Met Val Cys Pro Ile Ile Val 450 455 460

Gly Ala Met Thr Lys Asn Lys Ser Arg Glu Glu Trp Gln Tyr Val Phe 465 470 475 480

Leu Ile Ala Ala Leu Val His Tyr Gly Gly Val Ile Phe Tyr Ala Leu
485 490 495

Phe Ala Ser Gly Glu Lys Gln Pro Trp Ala Asp Pro Glu Glu Thr Ser
500 505 510

Glu Glu Lys Cys Gly Phe Ile His Glu Asp Glu Leu Asp Glu Glu Thr 515 520 525

Gly Asp Ile Thr Gln Asn Tyr Ile Asn Tyr Gly Thr Thr Lys Ser Tyr 530 540

Gly Ala Thr Ser Gln Glu Asn Gly Gly Trp Pro Asn Gly Trp Glu Lys 545 550 555

Lys Glu Glu Phe Val Gln Glu Ser Ala Gln Asp Ala Tyr Ser Tyr Lys
565 570 575

Asp Arg Asp Asp Tyr Ser 580

<210> 13

<211> 2528

<212> DNA

<213> Mus musculus

```
<400> 13
ggcacgaggc tcagtcttaa ttccactctg ccactctgcc gcagagcaca attacgccgg 60
cgcgatggga ggagaccatg ttaaggcagg aagctaacag cagccgctca cctgaggcct 120
aggaagctcc caagggttct gagagctatg agctctgatc agcaaagtca ccattttaga 180
cagtagggtt cttttgcttt tttccttaca caagggttcg atgacgtttc tggtcaatct 240
gattaaaaga cagcggattt gattgcgata agacttcaaa accgggaatt tacgttgttt 300
ttcggtgagg tgacttccag aacagggact catcagcacc cgcccaaata ccacggcact 360
gegegegece teggeeaceg gatecteece ttecaatgag aetttgtgae tgtgtgtace 420
aatteteeta ttaggaaace egtgggetge atgeagetat tetgttgtae tetettete 480
gccctccctc ccctctccaa ctcacagcct tgctggaaag ctcacctctg ctgagaagaa 540
aaagctctac cttaaccaac taagactatg cgcagaatcc gtctttcata gccacaacaa 600
tttaaatctg gtaaggctgg acaccagtct ttacaagaat ggagtcggta aaacaaagga 660
ttttggcccc ggggaaagag gggataaaga attttgctgg aaaatccctc ggacagatct 720
acagggtgct ggagaagaag caggacaacc gagagaccat cgagctgaca gaggacggta 780
agcccctgga ggtgcctgag aagaaggctc cgctatgcga ctgcacgtgc ttcggcctgc 840
egegeegeta cateatagee ateatgageg geeteggett etgeatatee tteggeatee 900
gctgtaacct gggcgtggcc atcgtggaca tggtcaacaa cagcactatc caccgcggag 960
gcaaagttat caaggagaaa gccaaattta actgggaccc cgagaccgtg gggatgatcc 1020
ggctggctgc taaccgggtc ttttggggctg cgatactgct cacctctacc ctcaatatgc 1140
tgatcccatc tgcagccaga gtgcattatg gatgtgtcat ctttgttagg atattgcaag 1200
gacttgtgga gggtgtcacc tacccagcct gtcatgggat atggagcaag tgggccctc 1260
ccttggagag gagtaggttg gctacaacct ccttttgtgg ttcctatgct ggagcagtca 1320
ttgcaatgcc cttagctggt atccttgtgc agtacactgg atggtcgtca gtattttatg 1380
tgtatggaag ctttggcatg gtctggtaca tgttctggct tctggtgtct tatgagagcc 1440
ctgcaaagca tcctaccatt acagatgaag aacgtaggta catagaggag agcattggag 1500
agagcgcaaa tctgctaggt gcaatggaaa aatttaagac cccatggagg aagtttttca 1560
catccatgcc cgtctacgcg ataattgttg ccaacttctg caggagctgg actttttatt 1620
tactgctcat cagtcagcca gcttattttg aggaggtttt tggatttgaa atcagcaagg 1680
ttggcatgtt gtctgcagtc cctcaccttg tcatgacaat cattgtgcct atcggggggc 1740
aaattgcaga tttcctaagg agcaagcaaa ttctctcaac aactacagtg agaaagatca 1800
tgaattgtgg gggttttggc atggaagcca cgctgcttct ggttgttggc tactctcata 1860
ctagagggt ggccatctcc ttcttggtgc ttgcagtagg attcagtgga tttgctatct 1920
ctggtttcaa tgttaatcac ttggatattg ctccaagata tgccagtatc ttaatgggca 1980
tttcaaatgg cgttggcacg ctgtcgggga tggtttgccc tatcattgtt ggtgcaatga 2040
caaagaataa gtcccgtgaa gaatggcagt atgtcttcct cattgctgca ctcgtccact 2100
atggtggagt catattttat gcactatttg cctcaggaga gaaacaacct tgggcagacc 2160
ctgaggaaac aagcgaagaa aaatgtggct tcattcacga agatgaactg gatgaagaaa 2220
cgggggacat cactcagaat tacataaatt acggtaccac caaatcttac ggtgctacct 2280
cacaggagaa tggaggctgg cctaacggct gggagaaaaa ggaagaattt gtgcaagaag 2340
gtgcgcaaga cgcgtacacc tataaggacc gagatgatta ttcataacga tgctagttgc 2400
tggattcatt tgtagtgttt gtgaatcaat taattgtgat tgcacaaaaa taattttaaa 2460
aatgtggtgt gaacatgtaa acatatcaac caagcaagtc ttgctgttca aaaaaaaaa 2520
aaaaaaaa
                                                                 2528
<210> 14
<211> 582
<212> PRT
<213> Mus musculus
<400> 14
Met Glu Ser Val Lys Gln Arg Ile Leu Ala Pro Gly Lys Glu Gly Ile
                                    10
```

Lys Asn Phe Ala Gly Lys Ser Leu Gly Gln Ile Tyr Arg Val Leu Glu

30

25

20

Lys Lys Gln Asp Asn Arg Glu Thr Ile Glu Leu Thr Glu Asp Gly Lys Pro Leu Glu Val Pro Glu Lys Lys Ala Pro Leu Cys Asp Cys Thr Cys 50 55 60 Phe Gly Leu Pro Arg Arg Tyr Ile Ile Ala Ile Met Ser Gly Leu Gly 70 Phe Cys Ile Ser Phe Gly Ile Arg Cys Asn Leu Gly Val Ala Ile Val Asp Met Val Asn Asn Ser Thr Ile His Arg Gly Gly Lys Val Ile Lys Glu Lys Ala Lys Phe Asn Trp Asp Pro Glu Thr Val Gly Met Ile His 120 Gly Ser Phe Phe Trp Gly Tyr Ile Ile Thr Gln Ile Pro Gly Gly Tyr Ile Ala Ser Arg Leu Ala Ala Asn Arg Val Phe Gly Ala Ala Ile Leu Leu Thr Ser Thr Leu Asn Met Leu Ile Pro Ser Ala Ala Arg Val His 170 Tyr Gly Cys Val Ile Phe Val Arg Ile Leu Gln Gly Leu Val Glu Gly Val Thr Tyr Pro Ala Cys His Gly Ile Trp Ser Lys Trp Ala Pro Pro 200 Leu Glu Arg Ser Arg Leu Ala Thr Thr Ser Phe Cys Gly Ser Tyr Ala Gly Ala Val Ile Ala Met Pro Leu Ala Gly Ile Leu Val Gln Tyr Thr 230 235 Gly Trp Ser Ser Val Phe Tyr Val Tyr Gly Ser Phe Gly Met Val Trp 245 250 Tyr Met Phe Trp Leu Leu Val Ser Tyr Glu Ser Pro Ala Lys His Pro 265 Thr Ile Thr Asp Glu Glu Arg Arg Tyr Ile Glu Glu Ser Ile Gly Glu 275 280 Ser Ala Asn Leu Leu Gly Ala Met Glu Lys Phe Lys Thr Pro Trp Arg 295 Lys Phe Phe Thr Ser Met Pro Val Tyr Ala Ile Ile Val Ala Asn Phe 305 310 315

Cys Arg Ser Trp Thr Phe Tyr Leu Leu Leu Ile Ser Gln Pro Ala Tyr 325 330 335

Phe Glu Glu Val Phe Gly Phe Glu Ile Ser Lys Val Gly Met Leu Ser 340 345 350

Ala Val Pro His Leu Val Met Thr Ile Ile Val Pro Ile Gly Gly Gln 355 360 365

Ile Ala Asp Phe Leu Arg Ser Lys Gln Ile Leu Ser Thr Thr Thr Val 370 375 380

Arg Lys Ile Met Asn Cys Gly Gly Phe Gly Met Glu Ala Thr Leu Leu 385 390 395 400

Leu Val Val Gly Tyr Ser His Thr Arg Gly Val Ala Ile Ser Phe Leu 405 410 415

Val Leu Ala Val Gly Phe Ser Gly Phe Ala Ile Ser Gly Phe Asn Val 420 425 430

Asn His Leu Asp Ile Ala Pro Arg Tyr Ala Ser Ile Leu Met Gly Ile 435 440 445

Ser Asn Gly Val Gly Thr Leu Ser Gly Met Val Cys Pro Ile Ile Val 450 455 460

Gly Ala Met Thr Lys Asn Lys Ser Arg Glu Glu Trp Gln Tyr Val Phe 465 470 470 480

Leu Ile Ala Ala Leu Val His Tyr Gly Gly Val Ile Phe Tyr Ala Leu 485 490 495

Phe Ala Ser Gly Glu Lys Gln Pro Trp Ala Asp Pro Glu Glu Thr Ser 500 505 510

Glu Glu Lys Cys Gly Phe Ile His Glu Asp Glu Leu Asp Glu Glu Thr 515 520 525

Gly Asp Ile Thr Gln Asn Tyr Ile Asn Tyr Gly Thr Thr Lys Ser Tyr 530 535 540

Gly Ala Thr Ser Gln Glu Asn Gly Gly Trp Pro Asn Gly Trp Glu Lys 545 550 555 560

Lys Glu Glu Phe Val Gln Glu Gly Ala Gln Asp Ala Tyr Thr Tyr Lys 565 570 575

Asp Arg Asp Asp Tyr Ser 580